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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

PLG

Office Action Summary	Application No. 09/633,882	Applicant(s) THORUP ET AL.	
	Examiner Benjamin R Bruckart	Art Unit 2155	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Status of Claims:

Claims 1-27 are pending in this Office Action.

The objection to the oath / declaration is withdrawn.

The Amendment to the specification overcomes the objection therefore the objection to the specification is withdrawn.

Response to Arguments

Applicant's arguments, see February 5, 2004, filed on paper 12, with respect to claim 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 27 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 27 recites the limitation "the diversification process" in claim 27, on page 6 of the amendment. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 21, 23-26 are rejected under 35 U.S.C. 102(b) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al.

Regarding claim 21, a method for controlling traffic flow in a network having N interconnected links (Morrison: col. 2, lines 58- col. 3, line 5; col. 5, lines 55-65; col. 7, lines 30-44; Remarks below; col. 7, lines 46-50), where N is an integer, comprising:

generating a control weight for each of said N links by considering an N-dimensional cost function of traffic load on each of said N links and selecting a point on said multidimensional cost function that is or approaches at least a minimum (Morrison: col. 6, lines 42-44; col. 7, lines 30-44; col. 11, line 47- col. 12, line 10; col. 9, lines 15-35); and

controlling traffic flow in the network using the set of control weights (Morrison: col. 7, lines 30-44).

Regarding claim 23, the Morrison reference teaches the method of claim 21, where the point is selected by cycling through a local search technique (Morrison: col. 9, lines 15-35) and a heuristic technique that moves a potential solution point to outside a neighborhood of the local search (Morrison: col. 9, lines 15-35; Figure 2; where the algorithm explores another virtual path in a network for the optimum path)

Regarding claim 24, the method of claim 21 where the cost function is piecewise linear (Morrison: col. 15, lines 1-5, col. 12, lines 1-10; col. 9, 16-25).

Regarding claim 25, the method of claim 21 where the cost function is convex (Morrison: col. 15, lines 1-5, col. 12, lines 1-10; col. 9, 16-25).

Regarding claim 26, the method of claim 21 where the second derivative of the cost function is non-negative (Morrison: col. 15, lines 1-5, col. 12, lines 1-10; col. 9, 16-25).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem")(1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni").

Regarding claim 1,

The Morrison reference teaches a method for controlling traffic flow in a network (Morrison: col. 2, lines 58- col. 3, line 5; col. 5, lines 55-65; col. 7, lines 30-44; Remarks below), comprising:

generating a set of control weights relating to network traffic flow (Morrison: col. 6, lines 42-44; col. 7, lines 30-44; col. 11, line 47- col. 12, line 10) and

controlling traffic flow in the network using the set of control weights. (Morrison: col. 7, lines 30-44)

The Morrison reference does not explicitly state using the best neighbor approach.

Frigioni teaches a best-neighbor approach (Page 6, 1st Paragraph; the Dijkstra algorithm)

Frigioni further teaches that using the dynamic Dijkstra algorithm requires minimum computation by not computing the entire table from scratch at each iteration. (Frigioni, Page 1, 2nd Paragraph)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network as taught by Morrison while employing a dynamic Dijkstra algorithm as taught by Frigioni in order to minimize computation by not computing the entire table from scratch at each iteration. (Frigioni, Page 1, 2nd Paragraph)

Claim 2 is rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison and Frigioni.

Regarding claim 2, the method of claim 1, wherein the best-neighbor approach is a modified the best-neighbor approach that uses at least an anti-cycling technique. (Frigioni: Page 6, 1st Paragraph; the Dijkstra algorithm is inherently anti-cycling)

Claims 3, 6 and 9-10, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 6,192,043 by Rochberger.

Regarding claim 3,

The Morrison and Frigioni references teach a method for controlling traffic flow in a network using a best neighbor approach. The Frigioni reference teaches modifying the best neighbor approach.

The Morrison and Frigioni references do not explicitly disclose an impatient technique.

The Rochberger reference teaches a best-neighbor approach is a modified the best-neighbor approach that uses at least an impatience technique. (Rochberger: col. 6, lines 25-53)

The Rochberger reference further teaches this method reduces time in calculating routes (Rochberger: col. 6, lines 25-26)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network with a best neighbor approach as taught by Morrison and Frigioni while modifying the best neighbor approach in an impatient technique as taught by Rochberger in order to reduce time in calculating routes (Rochberger: col. 6, lines 25-26).

Claim 6 and 9 are rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison and Frigioni and Rochberger.

Regarding claim 6, the method of claim 2, wherein the best-neighbor approach is a modified the best-neighbor approach that uses at least an impatience technique. (Frigioni: Page 5, 5th Paragraph)

Regarding claim 9, the method of claim 6, wherein generating a set of control weights is further based on a piece-wise linear equation (Morrison: col. 15, lines 1-5, col. 12, lines 1-10; col. 9, 16-25).

Regarding claim 10 (currently amended), the method of claim 3, wherein generating the set of control weights includes:

evaluating a first traffic cost based an existing set of weights (Morrison: col. 9, lines 30-44; W(0); col. 6, 17-19, lines 38-45);

generating a computed set of weights based on the existing set of weights (col. 11, line 47- col. 12, line 10) and the best-neighbor approach (Page 6, 1st Paragraph; the Dijkstra algorithm);

evaluating a second traffic cost relative to the computed set of weights (Morrison: col. 7, lines 30-44); and

if the second traffic cost is lower than the first traffic cost, declaring the computed set of weights to be the existing set of weights and the second traffic cost to be the first traffic cost (Morrison: col. 9, lines 15-35; 51-54);

if a pre-selected cost criterion has not been met, returning to said step of generating (Morrison: col. 9, lines 54-60); and

if the pre-selected cost criterion has been met, setting weights to correspond to the computed set of weights (Morrison: col. 9, lines 51-54).

Regarding claim 12, the method of claim 10, wherein generating the set of second weights is further based on a dynamic graph technique. (Frigioni: Page 6, 2nd Paragraph)

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 4,506,361 by Kume et al.

Regarding claim 4,

The Morrison and Frigioni references teach a method for controlling traffic flow in a network using a best neighbor approach. The Frigioni reference teaches modifying the best neighbor approach.

The Morrison and Frigioni references do not explicitly disclose a diversification process.

The Kume reference teaches generating the set of control weights is further based on at least a diversification process. (Kume: col. 6, lines 20-44)

The Kume reference further teaches the retransmission control system reduces the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network with a best neighbor approach as taught by Morrison and Frigioni while using a diversification process as taught by Kume in order to reduce the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9).

Claim 5 is rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison, Kume, and Frigioni.

Regarding claim 5, the method of claim 4, wherein the diversification process is a limited range diversification process. (Kume: col. 2, lines 3-27)

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in

further view of U.S. Patent No. 6,192,043 by Rochberger in further view of U.S. Patent No. 4,506,361 by Kume et al.

Regarding claim 7,

The Morrison, Frigioni and Rochberger references teach a method for controlling traffic flow in a network using a modified best neighbor approach called the impatience technique.

The Morrison, Frigioni and Rochberger references do not explicitly disclose a diversification process.

The Kume reference teaches generating the set of control weights is further based on at least a diversification process. (Kume: col. 6, lines 20-44)

The Kume reference further teaches the retransmission control system reduces the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network with a modified best neighbor approach as taught by Morrison, Frigioni and Rochberger while using a diversification process as taught by Kume in order to reduce the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9).

Claim 8 is rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison, Kume, Rochberger and Frigioni.

Regarding claim 8, the method of claim 7, wherein the diversification process is a limited range diversification process. (Kume: col. 2, lines 3-27)

Claims 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 6,192,043 by Rochberger in further view of U.S. Patent No. 5,533,016 by Cook et al.

Regarding claim 11,

The Morrison, Frigioni and Rochberger references teach a method for controlling traffic flow in a network using a modified best neighbor approach that uses an impatient technique.

The Morrison, Frigioni and Rochberger references do not explicitly teach a rarefied neighborhood search.

The Cook reference teaches, the method of claim 10, wherein generating the set of second weights is further based on at least a rarefied neighborhood search (Cook: col. 1, lines 58- col. 2, line 4; the invention sarches through a subset of the nodes).

The Cook reference further teaches limiting a predetermined constant value minimizes the processing time needed to calculate the lowest cost ring (Cook: col. 2, lines 1-4).

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network with a modified best neighbor approach as taught by Morrison, Frigioni, and Rochberger while performing a rarefied neighborhood search as taught by Cook in order to minimize the processing time needed to calculate the lowest ring cost (Cook: col. 2, lines 1-4).

Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6)("Frigioni").

Regarding claim 13 (currently amended)

The Morrison reference teaches an apparatus for controlling traffic flow in a network (Morrison: col. 2, lines 58- col. 3, line 5; col. 5, lines 55-65; col. 7, lines 30-44), comprising:

a weight device that generates a set of control weights (Morrison: col. 6, lines 42-44; col. 7, lines 30-44), one for each link of the network (col. 11, line 47- col. 12, line 10; l=1, 2, ..., L), and

at least one network node that receives one or more control weights of the set of control weights (Morrison: col. 1, lines 17-26; "nodes connected to each other"), and controls traffic flow in the network based at least the one or more control weights (Morrison: col. 2, lines 58- col. 3, line 5; col. 5, lines 55-65; col. 7, lines 30-44).

The Morrison reference does not explicitly state using a best-neighbor approach.

Frigioni teaches a best-neighbor approach (Page 6, 1st Paragraph; the Dijkstra algorithm)

Frigioni further teaches that using the dynamic Dijkstra algorithm requires minimum computation by not computing the entire table from scratch at each iteration. (Frigioni, Page 1, 2nd Paragraph)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network as taught by Morrison while employing a dynamic Dijkstra algorithm as taught by Frigioni in order to minimize computation by not computing the entire table from scratch at each iteration (Frigioni, Page 1, 2nd Paragraph).

Claims 14 is rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison and Frigioni.

Regarding claim 14, the method of claim 13, wherein best-neighbor approach is a modified best-neighbor approach that uses at least one of an anti-cycling mechanism (Frigioni: Page 6, 1st Paragraph; the Dijkstra algorithm is inherently anti-cycling) and an impatience mechanism (Frigioni: Page 5, 5th Paragraph).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 6,192,043 by Rochberger.

Regarding claim 15,

The Morrison and Frigioni references teach a method for controlling traffic flow in a network using a modified best neighbor approach that uses anti-cycling (Frigioni: Page 5, paragraphs 4 and 5; Page 6, 1st Paragraph; the Dijkstra algorithm is anti-cycling).

The Morrison and Frigioni references do not explicitly disclose an impatient technique.

The Rochberger reference teaches a best-neighbor approach is a modified the best-neighbor approach that uses at least an impatience technique. (Rochberger: col. 6, lines 25-53)

The Rochberger reference further teaches this method reduces time in calculating routes (Rochberger: col. 6, lines 25-26)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network with a best neighbor approach as taught by Morrison and Frigioni while modifying the best neighbor approach in an impatient technique as taught by Rochberger in order to reduce time in calculating routes (Rochberger: col. 6, lines 25-26).

Claims 16, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 6,192,043 by Rochberger in further view of U.S. Patent No. 4,506,361 by Kume et al.

Regarding claim 16,

The Morrison and Frigioni references teach an apparatus for controlling traffic flow in a network using a best neighbor approach. The Frigioni reference teaches modifying the best neighbor approach.

The Morrison and Frigioni references do not explicitly disclose a diversification process.

The Kume reference teaches the apparatus of claim 13, wherein the weight device includes a diversification process. (Kume: col. 6, lines 20-44)

The Kume reference further teaches a retransmission control system, which reduces the number of packet collision, and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the apparatus of controlling traffic flow in a network with a best neighbor approach as taught by Morrison and Frigioni while using a

diversification process as taught by Kume in order to reduce the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9).

Claim 17 is rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison, Kume, and Frigioni.

Regarding claim 17, the method of claim 4, wherein the diversification process is a limited range diversification process. (Kume: col. 2, lines 3-27)

Regarding claim 17, the apparatus of claim 16, wherein the diversification process is a limited range diversification process. (Morrison: col. 9, lines 46-60; where threshold amount is the limit changes are based upon)

Regarding claim 19, the apparatus of claim 16, wherein the weight device includes a cost calculator that calculates at least the cost of at least one control weight of the set of control weights based on a piece-wise linear cost function having two or more segments (Morrison: col. 15, lines 1-5, col. 12, lines 1-10; col. 9, 16-25).

Claims 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 6,192,043 by Rochberger in further view of U.S. Patent No. 4,506,361 by Kume et al.

Regarding claim 18,

The Morrison, Frigioni and Rochberger references teach an apparatus for controlling traffic flow in a network using a modified best neighbor approach called the impatience technique.

The Morrison, Frigioni and Rochberger references do not explicitly disclose a diversification process.

The Kume reference teaches the apparatus of claim 15, wherein the weight device includes a diversification device that performs at least one diversification process (Kume: col. 6, lines 20-44).

The Kume reference further teaches the retransmission control system reduces the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the apparatus of controlling traffic flow in a network with a modified best neighbor approach as taught by Morrison, Frigioni and Rochberger while using a diversification process as taught by Kume in order to reduce the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9).

Claim 20 is rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison, Kume, Rochberger and Frigioni.

Regarding claim 20, the apparatus of claim 15, wherein the weight device includes a diversification device that performs at least one diversification process. (Morrison: col. 9, lines 46-60; where threshold amount is the limit changes are based upon)

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6)("Frigioni").

Regarding claim 22,

The Morrison reference teaches a method for controlling traffic flow in a network having N interconnected links (Morrison: col. 2, lines 58- col. 3, line 5; col. 5, lines 55-65; col. 7, lines 30-44; Remarks below; col. 7, lines 46-50).

The Morrison reference does not explicitly state using the best neighbor approach.

Frigioni teaches wherein said point is selected by a best-neighbor algorithm (Page 6, 1st Paragraph; the Dijkstra algorithm)

Frigioni further teaches that using the dynamic Dijkstra algorithm requires minimum computation by not computing the entire table from scratch at each iteration. (Frigioni, Page 1, 2nd Paragraph)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network as taught by Morrison while employing a dynamic Dijkstra algorithm as taught by Frigioni in order to minimize computation by not computing the entire table from scratch at each iteration. (Frigioni, Page 1, 2nd Paragraph)

Claims 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 6,192,043 by Rochberger in further view of U.S. Patent No. 4,506,361 by Kume et al.

Regarding claim 27,

The Morrison and Frigioni references teach a method for controlling traffic flow in a network using a modified best neighbor approach.

The Morrison and Frigioni references do not explicitly disclose a limited ranger diversification process or a diversification process.

The Kume reference teaches generating the set of control weights is further based on at least a diversification process. (Kume: col. 6, lines 20-44) with limited range (col. 2, lines 3-27).

The Kume reference further teaches the retransmission control system reduces the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network with a modified best neighbor approach as taught by Morrison, Frigioni while using a diversification process as taught by Kume in order to reduce the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9).

Remarks

The applicant argues:

The Morrison reference does not teach the limitations of claim 1, where the weights are generated, created, and used to control traffic flow.

In response, the examiner respectfully submits:

The Morrison reference teaches a method for controlling traffic flow in a network (Morrison: col. 2, lines 58- col. 3, line 5; col. 5, lines 55-65; col. 7, lines 30-44). The methods for achieving optimum network performance are derived from implied costs (col. 6, lines 42-44; and col. 7, lines 39-44). The implied costs are equated to that of the weights of applicant's invention. The implied costs generated from equations found col. 11, line 47- col. 12, line 10. Note Csl(s=1, 2, ..., S; l=1, 2, ..., L) is the set of implied costs for different services (s) and links (l) , equations 3.7 – 3.10. The implied casts are generated from these equations relating to network traffic flow: offered loads, network revenue and offered probabilities (col. 11, lines 47- col. 12, line 10; col. 6, lines 38-45). The implied costs reflect the altered traffic loads and are used to re-dimension the network in real time (col. 7, lines 30-44).

The applicant argues:

The Morrison reference does not teach using weights based on a best-neighbor approach.

In response, the examiner respectfully submits:

The Morrison reference teaches a method for controlling traffic flow in a network, comprising: (Morrison: col. 2, lines 58- col. 3, line 5; col. 5, lines 55-65)

generating a set of control weights relating to network traffic flow (col. 6, lines 42-44; and col. 7, lines 39-44; col. 11, line 47- col. 12, line 10) and

controlling traffic flow in the network using the set of control weights (col. 7, lines 30-44; col. 11, line 47- col. 12, line 10).

The Morrison reference does not explicitly state using the best neighbor approach.

Frigioni teaches a best-neighbor approach (Page 6, 1st Paragraph; the Dijkstra algorithm)

Frigioni further teaches that using the dynamic Dijkstra algorithm requires minimum computation by not computing the entire table from scratch at each iteration. (Frigioni, Page 1, 2nd Paragraph)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network as taught by Morrison while employing a dynamic Dijkstra algorithm as taught by Frigioni in order to minimize computation by not computing the entire table from scratch at each iteration. (Frigioni, Page 1, 2nd Paragraph)

The applicant argues:

Morrison et al and Frigioni et al references do not teach the limitations of claims 3-8.

In response, the examiner respectfully submits:

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., impatience technique, diversification process, limited-range diversification process) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin R Bruckart whose telephone number is (703) 305-0324. The examiner can normally be reached on 8:30-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (703) 308-6662. The fax phone numbers for

the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0324.

Benjamin R Bruckart
Examiner
Art Unit 2155
brb
March 12, 2004

BRB

HOSAIN ALAM
SUPERVISORY PATENT EXAMINER